

STUDIES ON THE PLECOPTERA OF NORTH AMERICA, I.*

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The following new species is described from material collected by Dr. C. P. Alexander in the Adirondack Mountains of New York. I feel it a special privilege to describe this unusual insect since Dr. Alexander is himself very much better qualified to describe it than I. I therefore wish here to acknowledge thanks for his kindness and encouragement and take great pleasure in naming this insect after him, *Taeniopteryx (Oemopteryx) alex* n. sp.

This is the only member of *Oemopteryx* (which I consider to be a subgenus of *Taeniopteryx*) known from North America. Two other species have been described, the subgenotype, *T. loewii* Albarde of Europe, and *T. (O.) karakorum* (Šámal) from the Karakorum Mountains in Northern Kashmir, Central Asia.

Taeniopteryx (Oemopteryx) alex n. sp.

Male: General color dark brown or black. Length to apex of wings, 17 mm.; to apex of body, 12 mm. Wings reduced; front wings extending not even to posterior margin of metanotum. Hind wings with reduced venation and no anal fan. Supra-anal process composed of a tube, a bilobed, and a trilobed process. Subgenital plate large, without ventral lobe. Basal segment of cercus bearing a lobe dorsally.

Head slightly darker in color than remainder of body; a lighter colored, raised, glabrous, and somewhat triangular area in front of the hind ocellus and approximating the compound eye. Posterior ocelli about three times as far apart as from compound eyes. Coronal suture and epicranial arms distinctly visible. Antennae 55-segmented.

Thoracic segments uniformly brown. Pronotum as wide as head, with a distinct median black line. Tibiae slightly lighter in color than femora. Fore wings very greatly reduced (length 3.5 mm.), extending not quite to the posterior margin of the metanotum; venation much reduced. Hind wings also greatly reduced in size (length 12 mm.) and venation, but extending considerably beyond tip of abdomen; anal fan obliterated.

Abdomen uniformly brown. Supra-anal process composed of three parts curving upward from a basal bulb. Median sec-

* Contribution from the Department of Entomology, Massachusetts State College, Amherst, Massachusetts.

tion transverse, terminally bilobed, bearing the posterior section which consists of a tube covered with short spines and having a sharp needle-like process projecting from it. Anterior part also transverse but trilobed terminally. Subgenital plate remarkably produced and extending even beyond the cerci. It is evenly rounded at the tip and curves up and over laterally and caudally; no ventral appendage. Subanal lobes composed of symmetrical sclerotized upper parts and asymmetrical membranous lower parts bearing various sclerotized projections. The darkly sclerotized part which curves up mesad of the cercus is truncate at the tip and rounded basally. The unsclerotized asymmetrical parts extend downward from the rounded basal portions of the subanal lobes and lie in the cup formed by the subgenital plate. The lower part of the right lobe bears a black comb, a black tooth, and a finger-like projection. The corresponding part of the left lobe bears no such heavily sclerotized projections but bears a row of hairs, a finger-like projection, and a blunt tooth. Cerci 5-segmented; first segment constricted near base and bearing a club-shaped membranous lobe dorsally.

Female: Head and thorax dark brown or black; abdomen light brown. Length to apex of wings, 26 mm.; to apex of body, 18 mm. Basal portion of Cu of fore wing white. Subgenital plate triangularly produced to beyond subanal lobes. Eighth sternite slightly cleft.

Head dark brown or black. The raised area in front of ocellus black. Other head features as described for male.

Thorax dark brown or black, as dark as head. Prothorax slightly wider than head, widening basally. Median dark line of prothorax hardly visible. Legs uniformly medium brown. Wings normal in size and venation. Cu of both fore and hind wings white in color from cubito-anal crossvein back nearly to base; cubito-anal crossvein entirely white in fore wing.

Abdomen light brown. Abdominal sternites sclerotized only in a transverse strip in the middle of each segment, except apical three which are completely sclerotized. Subgenital plate wide and triangularly produced to beyond tips of subanal lobes, slightly upcurved at apex. Eighth sternite cleft, with a tiny emarginate flap protruding part way over the genital opening which is near the apical margin of the eighth sternite. Cerci composed of eight segments; the basal segments greatly fused.

Holotype, male; allotype, female (deposited in the Massachusetts State College Collection); paratypes 40 ♂, 12 ♀, Wells, Hamilton

County, New York, along the Sacandaga River, altitude 1000 feet, April 3, 1937 (Coll. Dr. C. P. Alexander). "Collected on snow drifts along river between village and State Public Camp site two miles south."

Although this new species does not agree with Klapálek's generic character of a 4-branched radial sector in the fore wing of the female it must be placed near his genotype, *Oemopteryx loewii* Albarda, on account of many other similarities. The following key shows the close relation between *T. (O.) alex* and *T. (O.) loewii* and also the differences which easily distinguish the two species.

KEY

A. Male brachypterous, venation much reduced, anal fan obliterated. Fore wing less than half as long as hind wing, with no narrow prolongation at apex. Costal area without crossveins, radial sector of hind wing usually 3-branched, media usually simple, cubitus usually 2-branched. Supra-anal process composed of three regions, one of which is tubular. Subgenital plate large, without ventral lobe. Subanal lobes asymmetrical. Cercus with basal membranous lobe.

Female not brachypterous. Fore wing without costal crossveins, Rs 2- or 3-branched, second anal vein 2-branched. Subgenital plate produced beyond apex of abdomen in a broad triangle. **alex**

AA. Male brachypterous, venation much reduced, anal fan obliterated. Fore wing less than half as long as hind wing, with a narrow prolongation at apex nearly as long as remainder of wing. Costal area of hind wing without crossveins, radial sector 3-branched, media 2-branched, cubitus 2-branched. Supra-anal process composed of two regions one of which is a tubular extension. Subgenital plate large, without ventral lobe. Cercus with a basal membranous lobe.

Female not brachypterous. Fore wing with one costal crossvein near tip of R_1 , Rs 4-branched, second anal vein simple. Subgenital plate produced in a broad triangle but not extending beyond apex of abdomen. *loewii*

Exuviae of female naïad: General color uniformly medium brown. Length of body 16 mm. Subgenital plate produced in a broad triangle to beyond tip of abdomen. Antennae and cerci extremely long, longer than body.

Head uniformly light brown. Antennae 93-95 segmented; 18 mm. long.

Thorax uniformly light brown. Gills absent. Tips of last tarsal segments dark brown. Femora slightly darker near distal end.

Abdominal tergites slightly darker in color than head and thorax. Only sternites 8, 9, and 10 sclerotized. Subgenital plate produced in a large triangle to beyond tip of abdomen. Cerci 65-segmented; 19 mm. long.

The naiad, described from the exuviae of three females, closely resembles that of *T. californica* but its subgenital plate is more pointed. Its body is much longer and its antennae and cerci are more than twice as long as those of *T. californica* Needham and Claassen.

The fact that both antennae and cerci are longer than the body is a character which makes possible at a glance differentiation from all other known naiads of *Taeniopteryx*.

On the basis of the similarity, especially of the females, of the species of *Oemopteryx* Klapálek to species of *Taeniopteryx* Pictet, I think that *Oemopteryx* can not be considered as a distinct genus as has previously been done by Klapálek and Šámal. There are, however, the following characters which, in my opinion, have a subgeneric value:

Male brachypterous, anal fan obliterated. Fore wing less than half as long as hind wing. Radial sector of hind wing usually three branched. Subgenital plate greatly produced, evenly rounded at apex, and without ventral lobe. Subanal lobes asymmetrical. Cercus with a basal membranous lobe.

Female subgenital plate greatly produced in a broad triangle.

The value of these characters will be better known following a comparison of *T. (O.) karakorum* which at present is inaccessible to me.

EXPLANATION OF PLATE II.

- Fig. 1. ♂ dorsal view.
- Fig. 2. ♂ supra-anal process.
- Fig. 3. ♂ subgenital plate.
- Fig. 4. ♂ lateral view.
- Fig. 5. ♂ wings.
- Fig. 6. ♀ wings.
- Fig. 7. ♀ ventral view.
- Fig. 8. ♀ naiad, ventral view.